



9372

PART IV.—EDUCATION, SCIENCE, AND ART (C).

Administration Report of the Director of Medical and Sanitary Services for 1945.

(Dr. S. F. CHELLAPPAH, O.B.E.)

OCTOBER, 1946.

Printed on the Orders of Government.

PRINTED AT THE CEYLON GOVERNMENT PRESS, COLOMBO.

To be purchased at the GOVERNMENT RECORD OFFICE, COLOMBO; price 50 cents.

1946.

“Copy” received : August 19, 1946.

Proof sent : September 5, 1946.

Proof returned : September 21, 1946.

Published : October 2, 1946.

DEPARTMENT OF MEDICAL AND SANITARY SERVICES.

ADMINISTRATION REPORT OF THE DIRECTOR OF MEDICAL AND SANITARY SERVICES FOR 1945.

SECTION I.—VITAL STATISTICS.

The Registrar-General has furnished the following figures:—

Estimated population	..	..	..	*6,477,000
Total number of births registered	..	..	..	238,495
Birth rate per 1,000 of the population	..	..	..	36·8
Total Deaths registered	..	..	..	142,391
Death rate per 1,000 of the population	..	..	..	22·1
Infant deaths	..	..	..	33,309
Infant death rate per 1,000 live births	..	..	..	140
Maternal deaths	..	..	..	3,940
Maternal death rate per 1,000 live births	..	..	..	16·5

Table of the main causes of deaths registered in Ceylon for 1945.

All Causes :—	..	..	..	142,931
I. Infectious and parasitic diseases	..	..	..	26,282
Typhoid fever and paratyphoid fever	..	..	..	1,478
Diphtheria	..	..	..	124
Influenza	..	..	..	1,679
Dysentery	..	..	..	1,938
Tuberculosis of the Respiratory system	..	..	..	3,268
Tuberculosis of other organs	..	..	..	378
Disseminated Tuberculosis — Acute	..	..	..	14
Unspecified	..	..	..	6
Malarial fever and malarial cachexia	..	..	..	8,521
Black water fever	..	..	..	18
Ankylostomiasis	..	..	..	1,819
II. Cancer and other tumours	..	..	..	847
Cancer and other malignant tumours	..	..	..	811
III. Rheumatic Diseases, Nutritional Diseases, Diseases of the Endo- crine Glands, and other general Diseases	..	..	..	11,026
Acute rheumatic fever	..	..	..	2,283
Rickets	..	..	..	588
Mandama	..	..	..	7,051
IV. Diseases of the blood and blood making organs	..	..	..	2,973
V. Chronic Poisonings and intoxications	..	..	..	2
VI. Diseases of the nervous system and of the organs of special sense	..	..	..	16,710
Infantile convulsions (age under 5 years)	..	..	..	12,835
VII. Diseases of the Circulatory system	..	..	..	4,028
VIII. Diseases of the Respiratory system	..	..	..	14,062
Bronchitis	..	..	..	1,448
Broncho-Pneumonia (including Capillary Bronchitis)	..	..	..	2,359
Lobar pneumonia	..	..	..	2,211
Pneumonia, Unspecified	..	..	..	4,743
IX. Diseases of the Digestive system	..	..	..	9,006
Diarrhoea and enteritis (under 2 years of age)	..	..	..	1,407
Diarrhoea and enteritis (2 years and over)	..	..	..	5,918
X. Non-Venereal disease of the Genito-Urinary system and annexa	..	..	..	2,128
XI. Diseases of Pregnancy, Child birth and the Puerperal state	..	..	..	3,940
Puerperal haemorrhage	..	..	..	333
Puerperal sepsis not returned as post-abortion	..	..	..	921
Puerperal albuminuria and convulsions	..	..	..	1,866
XII. Diseases of the skin and cellular tissue (Excludes <i>Rata</i> of infants)	..	..	..	1,578
XIII. Diseases of the Bones and organs of Locomotion	..	..	..	51
XIV. Congenital Malformations	..	..	..	120
XV. Diseases of Early Infancy (Includes <i>Rata</i>)	..	..	..	18,290
Congenital debility	..	..	..	5,600
Premature birth	..	..	..	4,292
<i>Rata</i>	..	..	..	8,174

* According to the Census taken on March 19, 1946, the population is 6,650,825.

XVI.	Old age	..	..	9,324
XVII.	Violent and Accidental Deaths	..	..	3,564
XVIII.	Ill-defined causes of deaths—Cause of death unstated or ill-defined	..	..	19,000
	(a) Dropsy	..	..	2,417
	(b) Pyrexia	..	..	15,375

SECTION 2.—GENERAL DISEASES.

As in previous years malaria continued to be the most prevalent disease. 103,167 cases were treated in hospitals and 2,338,403 at out-door dispensaries.

A summary of the most prevalent diseases is shown in the following table:—

TABLE OF MORBIDITY IN RESPECT OF IN-PATIENTS AND OF OUT-PATIENTS.

(a) Table of Morbidity in respect of In-patients, 1945.

Diseases.				No. of Cases.
Enteric	..	..	..	6,113
Malaria	..	..	..	103,167
Malarial Cachexia	..	..	..	4,355
Influenza	..	..	..	13,608
Dysentery	..	..	..	11,830
Tuberculosis	..	..	..	6,509
Syphilis	..	..	..	2,004
Gonorrhoea	..	..	..	1,863
Cancer	..	..	..	2,394
Chronic Rheumatism	..	..	..	4,531
Affections of the Eye	..	..	..	9,376
Bronchitis	..	..	..	9,355
Broncho-Pneumonia and Pneumonia	..	..	..	19,961
Asthma	..	..	..	3,586
Diarrhoea	..	..	..	15,055
Ankylostomiasis	..	..	..	10,186
Ascariasis	..	..	..	3,591
Abscess	..	..	..	10,190
Disease of Joints	..	..	..	1,784

(b) Table of Morbidity in respect of Out-patients, 1945.

Malaria	..	..	..	2,338,403
Malarial Cachexia	..	..	..	94,024
Influenza	..	..	..	576,833
Dysentery	..	..	..	39,041
Syphilis	..	..	..	1,046
Gonorrhoea	..	..	..	8,195
Chronic Rheumatism	..	..	..	403,932
Ear Diseases	..	..	..	54,293
Disease of the Lungs and Pleura	..	..	..	455,273
Gastric Diseases	..	..	..	838,803
Skin Diseases	..	..	..	327,951
Ulcers	..	..	..	596,745
Eye Diseases	..	..	..	98,221
Ankylostomiasis	..	..	..	269,225
Intestinal Troubles	..	..	..	501,778

SECTION 3.—COMMUNICABLE DISEASES.

The following table gives the cases of notifiable diseases with the deaths resulting therefrom:—

				Cases.	Deaths.
Chickenpox	..	..	..	4,753	12
Cholera	..	..	..	19	14
Diphtheria	..	..	..	242	46
Dysentery	..	..	..	4,404	432
Enteric (Typhoid)	..	..	..	2,681	438
Measles	..	..	..	2,927	5
Mumps	..	..	..	1,635	2
Phthisis	..	..	..	2,005	674
Smallpox	..	..	..	711	108
Plague	..	..	..	—	—
Whooping Cough	..	..	..	330	1
Poliomyelitis	..	..	..	4	1

PLAGUE.—There were no cases of plague during the year. The following figures give an account of the anti-plague measures taken exclusive of the Municipal areas:—

Commercial premises all types—

No. existing	..	..	..	21,809
No. inspected	..	..	..	17,160
Commercial premises found with rat holes	..	..	..	13,336
No. of rat holes found	..	..	..	46,599
No. of rat holes blocked	..	..	..	37,406
Premises fumigated	..	..	..	885
Premises radically improved	..	..	..	762
Grain boutiques existing	..	..	..	3,684
Premises provided with rat proof bins	..	..	..	1,808
Grain stores existing	..	..	..	742
Grain stores built newly	..	..	..	8
Rats caught	..	..	..	38,563
Number examined	..	..	..	346
Number found infected	..	..	..	Nil

CHOLERA.—There were altogether 19 cases, all of which were in the Trincomalee District and of these 14 proved fatal. The first outbreak occurred in the village of Pallikuddy Iruppu. The source of infection is not known. The first case in this outbreak occurred on October 8, 1945, and the last case on October 23, 1945. There were 16 cases with 13 deaths.

The second outbreak occurred in the village of Memkamam near Pallikuddy Iruppu on November 20. There were only 3 cases in this outbreak with 1 death. The last case occurred on November 23, 1945.

SMALLPOX.—The incidence of smallpox has been unusually high during the year 1945. The smallpox outbreak in Jaffna which started about December 20, 1944, continued till the end of February, 1945. There was an outbreak in Panadure in February, 1945, and in the adjoining villages. The source of infection of the outbreak at Panadure was traced to Jaffna. There were also outbreaks in Negombo, Badulla, Haputale, Maspana and Koslanda in February, 1945, and in the early part of March, 1945.

Towards the early part of April, there was an outbreak at Kotahena. The source of infection was a recent arrival from India. There were 9 cases with 2 deaths in this outbreak, which was over before the end of April, 1945. From about the end of June, 1945, up to the end of September, 1945, there were outbreaks at Chilaw, Mawanella, Demodera, Alawatugoda, Kurunegala, Maskeliya and Innuvil. The infection in these outbreaks had been introduced by persons who had recently returned to the Island. In view of the large number of cases occurring among persons returning from India, the question of the quarantine measures applicable to such passengers received consideration with a view to taking steps to minimise or prevent the occurrence of such cases. An outbreak occurred at Narammala during June and continued till the middle of July, 1945. A second outbreak of smallpox occurred in the City of Colombo, the area affected being Mutwal. The first case occurred on September 1 and the last case on October 22. The source of infection here was also a recent arrival from India. There were 67 cases with 10 deaths in this outbreak.

From October, 1945, outbreaks of smallpox have been reported from Kandy, Dehiwala, Ogodapola, Chilaw, Kegalla, Pallewela, Beruwala, Heenatigala in Unawatuna. The source of infection in many of these outbreaks is traceable to India.

An outbreak—the third for the year—started in the City of Colombo about the middle of December. The area worst affected was Dematagoda but cases also occurred at Wellawatta, Maradana and Kollupitiya. The source of infection of this outbreak has not yet been definitely traced. The first case in this outbreak occurred on December 18 and at the time of writing the date of last case reported from Colombo was March 6, 1946. Up to the end of December, 1945, 83 cases with 3 deaths occurred within the Municipal Council limits of Colombo in this outbreak. Altogether there have been 711 cases of smallpox with 108 deaths in the Island for 1945.

Immunization.	Anti-Typhoid.	Anti-Smallpox.
1st dose	.. 53,761	Primary .. 152,781
2nd dose	.. 39,330	Secondary .. 756,287

The number of primary vaccinations represent 66 per cent. of the previous year's birth.

Thirty-five Sanitary Assistants obtained their certificates of competency in vaccination making a total of 491 Sanitary Assistants who have qualified themselves in vaccination.

HOOKWORM.—Mass treatment for Ankylostomiasis has been administered to 1,332,029 persons in estates, schools, villages, hospitals and dispensaries by the officers of the Department. The decrease in the number of treatments administered by 87,942 is chiefly due to the fact that Anky Dispensers were withdrawn for special malaria duty.

Twenty-seven Sanitary Assistants and 1 Estate Dispenser were issued the certificate of Competency in Hookworm Treatment.

YAWS.—There were 1,040 known infectious and 3,746 non-infectious cases of Parangi. The number of injections given was 2,311. At the end of the year there were 742 known infectious and 4,019 non-infectious cases. Twenty-five cases were not traceable.

FILARIASIS.—There were 429 known cases of Filariasis in 196 villages. Pistia plants were removed from 69 villages out of the 167 localities in which this plant was growing.

TUBERCULOSIS.—The following institutions were in the main responsible for the care of the Tuberculous:—

- (i.) Chest Hospital, Ragama.
- (ii.) Sanatorium, Kandana.
- (iii.) Sanatorium, Kankesanturai.
- (iv.) Anti-Tuberculosis Institute, Colombo.
- (v.) Talagolla Hospital.
- (vi.) Galle T. B. Clinic.
- (vii.) Kandy T. B. Clinic.
- (viii.) Kotte-T. B. Survey work.

The total number of beds at the Sanatoria at Kankesanturai, Kandana, Ragama and Tuberculosis Hospital at Talagolla is 613 and more beds are being provided in the general hospitals. A post of Superintendent, Tuberculosis Campaign, was created during this year.

Number of patients treated.	1944.			1945.		
	Males.	Females.	Total.	Males.	Females.	Total.
Chest Hospital, Ragama ..	1,234	469	1,703	1,038	359	1,397
Sanatorium, Kandana ..	150	73	223	131	72	203
Sanatorium, Kankesanturai ..	242	156	398	—	—	147
Tuberculosis Hospital, Talagolla ..	—	—	—	136	54	160

At the Anti-Tuberculosis Institute, Colombo, the number of patients treated was 8,806. These patients paid 27,880 visits. In 1944, 5,036 patients paid 14,695 visits.

Six T.B. Booths were constructed during the year; the number at the end of the year was 39. 1932 patients were under care, of which 557 were in the hospitals while 1375 were isolated in their homes; of the latter, 709 were not isolated satisfactorily.

Tuberculosis Survey.—A 5,000 population of the Urban Council area of Kotte was selected in 1943 for the carrying out of a Tuberculosis Survey. A Trained Officer was placed in charge, and he started the work with the knowledge of 13 reported cases of Pulmonary Tuberculosis. At the end of December, 1945, he had discovered 75 Pulmonary cases and 69 Mediastinal gland cases. The work consisted of Tuberculin Testing and X-Ray of all Tuberculin positive cases. X-Rays were taken at the Anti-Tuberculosis Institute, and persons who were Tuberculin positive were taken there and back by a Departmental Van maintained for the purpose. The Staff consisted of, in addition to the Tuberculosis Officer,

one Public Health Nurse, one Sanitary Assistant, a Clerk and a Peon. During the year, 3,798 persons were examined, 5,730 Mantoux tests were carried out and 1,417 persons were X'Rayed.

The number of officers trained in Tuberculosis work up to end of 1945 is 7. One officer was trained in India during 1945.

VENEREAL DISEASES.—Satisfactory progress has been recorded during the year under review. There are at present 96 outstation clinics—in addition to the 4 clinics in the town of Colombo where Venereal Diseases are being treated.

The following is a statement of Visits to V. D. Clinics in the Island:—

	1944.	1945.
First Visits	15,392	13,620
Subsequent Visits	77,150	72,095

These figures show a slight decrease in the number of first and subsequent visits. These visits include visits of persons who have subsequently been found to be not V. D. The statistics available indicate that they were treated in Departmental Institutions.

3,534 cases of Syphilis.

2,474 cases of Gonorrhoea.

650 cases of Soft sore.

The Ceylon Society for Moral and Social Hygiene continues to assist the Department in the after-care and rehabilitation of Venereal Disease patients.

LEPROSY.—Anti-Leprosy work during the year was done:—

(a) in the two Leprosy Hospitals at Hendala and Mantivu.

(b) in the outdoor clinics attached to Civil Hospitals.

(c) by the field organization controlling and observing the non-infective cases and contacts.

The two hospitals are mainly for segregation, treatment and nursing of infective cases. The hospital at Hendala gives accommodation to 750 patients while Mantivu accommodates about 300.

	Hendala.	Mantivu.	Total.
Cases at the end of 1944	776	301	1,077
Cases at the end of 1945	653	308	961

Of the total of 961 cases, 300 were Neural and 661 Lepromatous.

7 cases were under 14 years and 954 cases over 14 years.

The field work of the Leprosy Campaign continued to be satisfactory in spite of the war conditions. 203 new cases were detected during the year as against 226 in 1944 and 195 in 1943. Out of 203 new cases, 24 were from direct contacts of patients and 39 gave a history of direct or indirect contact, the remainder were from localities known to have high incidence of Leprosy.

SECTION 4.—HYGIENE AND SANITATION.

Water Supply.—223 private and 57 public wells were constructed. Apart from the three Municipal towns, 15 Urban Councils, 23 Sanitary Board towns and 25 Village Committee towns have pipe-borne water supplies. Three towns augmented their supplies and 14 towns have worked out new schemes to provide pipe-borne water supplies.

468 samples were bacteriologically examined of which 19 showed evidence of pollution. 29 samples were chemically analysed of which 6 showed evidence of pollution.

Disposal of Excreta.—The total number of new latrines constructed was 1,743. This number is made up as follows:—Deep pit 1,195, with outside pit 66 and bucket latrines 482.

497 old pit latrines were converted to sanitary type; 10 old pit latrines were converted to bucket type; 126 old bucket latrines were converted to sanitary type and 20 water seal squatting plates were installed. Owing to lack of materials, the work has received a set-back.

Drainage.—124,987 feet of cement drains were constructed.

Licensed and Offensive trades.—There were 16,378 licensed trades of which 16,355 were inspected. Of these 3,402 were radically improved. Of the 238,342 defects found, 137,424 were corrected. Of the 2,579 offensive trades existing, 2,501 were inspected. Out of the 2,732 nuisances created, 639 were abated.

Anti-fly measures.—75,294 breeding places were found of which 64,588 were dealt with.

Food Sanitation.—63,626 head of cattle were inspected and 61,723 were passed as fit for slaughter. Of the 13,771 goats inspected, 13,650 were passed as fit for slaughter.

Milk Supply.—1,736 samples of milk were analysed out of which 1,495 were found adulterated.

Rural Sanitation Scheme.—Of the 625,550 houses in 10,581 villages that were taken up for work from the commencement of the scheme up to the end of 1945, 152,223 were completed partly and 39,594 fully. Of the latter, 19,609 houses were completed during the year under review. At the end of the year,

24,338 houses had compost heaps.

34,867 houses had vegetable gardens.

44,765 houses were provided with boiled and cooled water for drinking purposes.

19,256 houses were provided with windows.

16,795 houses were provided with latrines.

Housing.—Of the 823,542 private premises existing, 530,703 were inspected and of the 618,338 defects noted, 472,287 were rectified.

Of the 6,564 public premises existing, 6,088 were inspected. The number of inspections were 83,098. Of the 36,397 defects pointed out, 27,479 were rectified.

Out of the 2,620 building applications received, 1,831 were recommended and 563 were not recommended. The remaining applications were under consideration at the end of the year.

Estate Health Work.—There were approximately 2,306 estates scheduled under the Medical Wants Ordinance (Cap. 176). The staff for health work consisted of the same officers as mentioned in my last year's report.

There were 66 hospitals and 116 dispensaries maintained by Government in Estate Medical Districts. In addition there were 97 Estate hospitals and 722 Estate Dispensaries. All the Estate hospitals were inspected during the year. The Estate Medical Attendants consisted of 5 qualified Medical Officers, 1 qualified Apothecary and 712 Approved Dispensers. 446 Estates were inspected. Sanitary conditions of 8 per cent. of these estates were very good, 51 per cent. good, 33 per cent. fair, 5 per cent. poor, and 3 per cent. bad. 70 of these estates were fully provided with sanitary dustbins and 133 partially. 363 of these estates had non-crowded lines, 37 slightly crowded and the balance 46 had over-crowded lines. Of the 83,485 line rooms inspected, 68,737 were up to Government standard. In the estates inspected there were 12,244 pit, 1,259 water-borne and 11,577 bucket latrines compartments. 612 latrine compartments are further required. 355 of the estates inspected had sufficient number of latrines, 77 insufficient and 14 had no latrines. 71 estates had sanitary conveniences for children provided fully and 142 partially. 308 estates had entirely protected supply of water, 105 partially protected and 33 unprotected supplies. 79,950 persons were treated for Ankylostomiasis on 259 estates.

On all estates there were 282 registered midwives serving 449 estates and 35 unregistered midwives serving 47 estates. In addition 140 estates were served by other registered midwives not employed on estates. 671 estates had creches and 329 estates were supplying cooked meals to the children.

173 estates had maternity wards and 25 estates had lying-in-rooms attached to estate lines. 37 estates had clinics provided on the estates and 9 in Government hospitals and 64 other estates were served by outside clinics. 26,737 persons in 968 estates were vaccinated against smallpox. 22,102 of them were successful, 1,373 unsuccessful and 3,262 cases were unknown. 37 estates were visited for anti-typhoid inoculation. 5,444 first doses and 4,736 second doses were given. 423 visits by Inspecting Officers and 2,063 visits by Sanitary Assistants were paid to estates in connection with communicable diseases.

Eight schools were medically examined. Of the 272 children examined, 125 were defective. Of the 206 defects found, 86 were corrected.

SECTION 5.—MATERNITY AND CHILD WELFARE.

These services were extended by the appointment of 65 midwives and by the establishment of 4 new Maternity Homes at Borakande, Getamane, Hurikaduwa and Kiriella and of 38 Health Centres in rural areas.

The following is a statement in regard to the work done :

No. of Health Centres	..	..	503
No. of Clinics held ..	..	..	17,227
Expectant Mothers under care	..	..	106,216
Infants under care	..	..	74,577
Pre-school children under care	..	..	75,596
Deliveries by Departmental midwives	..	..	64,127✓
Deliveries in hospitals	..	..	39,658✓
Deliveries in Maternity Homes	..	..	13,461✓
Home Visits by Public Health Nurses	..	..	57,466
Home Visits by Public Health Midwives	..	..	744,968✓

SECTION 6.—SCHOOL HEALTH WORK.

The following figures show the work done :

No. of schools in the Island	..	..	6,085
No. of schools taken up for medical inspection	..	..	1,052
No. of students medically examined	..	..	54,840
No. of scholars defective	..	..	39,162
No. of defects found	..	..	81,624
No. of defects corrected	..	..	34,714

In 3,364 schools, the scheme of Health Education was in operation. 4,750 schools were provided with the mid-day meal. The amount spent for this purpose was Rs. 5,228,391.61.

SECTION 7.—HEALTH EDUCATION.

Health Education and propaganda were carried out on the same lines as in previous years. This year too, the special activity was the campaign to educate the people with regard to the danger of Venereal Diseases and the importance of its control. The press, platform, radio and leaflets were all used in an intensive propaganda drive. The All-Ceylon Health Week was held in July, this being the eighth year in succession. Owing to the difficulties experienced in obtaining the necessary material for the preparation of exhibits, literature, &c., and the lack of transport facilities, the celebrations were restricted to three days this year. The programme of work for the three days was as follows:—

Saturday, July 21, 1945	..	Anti-malaria Propaganda and Demonstrations
Sunday, July 22, 1945	..	Rural Health Scheme
Monday, July 23, 1945	..	General celebrations

Health Education is carried out by the various Medical Officers of Health, Sanitary Assistants, Public Health Nurses and Public Health Midwives both at Clinics and during their house to house visits. In this connection 188 lectures illustrated with lantern slides, 1,391 lectures without lantern slides and 30 cinema shows were held. The number of Health Exhibitions held was 134. The number of talks given in schools, villages and clinics by officers working in the field was 71,647. There were 1,859 staff conferences and 139 conferences with others held throughout the Island. The number of Health Leagues functioning was 73 and their total expenditure on Health work was Rs. 9,433.40.

The Departmental radio talks were delivered quarterly as usual, there being three talks each in English, Sinhalese and Tamil for each quarter, the programme of talks being as follows:—

1st Quarter	..	Milk
2nd Quarter	..	Food and Nutrition
3rd Quarter	..	Malaria
4th Quarter	..	Venereal Diseases

There were four issues of the "Health News" during the year devoted to these four subjects.

The following new propaganda leaflets were issued:—

	English.	Sinhalese.	Tamil.
Malaria and Mepacrine ..	5,000 ..	25,000 ..	20,000
D.D.T. the wonder insecticide ..	5,000 ..	25,000 ..	20,000
Vaccination and Smallpox ..	25,000 ..	75,000 ..	50,000
Cancer and the Danger of Betel chewing ..	5,000 ..	15,000 ..	10,000

SECTION 8.—NUTRITION.

Nutritional Survey.—Nutritional surveys were carried out throughout the year by trained Sanitary Assistants.

Dietary surveys of the following villages were carried out:—

Hidellana, Veechikalmunai, Palaminmadu, Etambagaskada, Godunne, Alutnuwara, Koholana, Deniyaya (estate population), Hidellana (repeated) and Midigama.

Nutritional surveys of school children in the following urban and rural areas were also carried out:—

Jaffna, Chilaw, Matara, Anuradhapura, Galle, Kandy, Kurunegala, Hambantota, Matale, Ambalangoda, Trincomalee, Yatiyantota, Badulla, Panadure, Deniyaya and Mannar.

Food Control.—Much assistance was given to the Food Control authorities with regard to the suitability for human consumption of many samples of cereals and flours, sent for examination.

Nutritional instruction.—Lectures on Nutrition were given to 54 Medical Students, 6 Medical Officers taking post-graduate courses and to 27 Sanitary Learners.

Short courses of instructions on Nutrition were given to probationary Divisional Revenue Officers and to Rural Development Officers.

Therapeutic.—Yeast extract was supplied throughout the year for use in hospitals and at Health Centres.

A preparation of a protein hydrolysate fortified with glucose and Vitamins of the B. group was supplied to hospitals for the treatment of malnourished children.

Propaganda.—Much assistance was given to the National Food Campaign on the preparation of posters; and nutrition models were prepared for public health exhibition. 2 Radio Talks were given during the year.

Investigations and Research.—The problems of Cyanide poisoning and the production of yeast were studied.

Estimates of many samples of Shark Liver oils for their Vitamin A values were carried out for the Government Shark Liver Oil Factory.

Blood samples from prisoners-of-war were examined with respect to their albumin-globulin ratios.

The food value of Beraliya (*Doonia Cordifolia*) was determined.

SECTION 9.—MALARIA AND ANTI-MALARIAL CAMPAIGNS.

Malaria epidemics of varying degrees of intensity have occurred in the years 1906, 1911, 1919, 1923, 1928, 1934-35, 1939 and 1943. We have reasons to believe that in Ceylon, as in many parts of the Tropics, malaria tends to become epidemic at intervals of approximately five years.

The partial failure of the North-East Monsoon of 1944, and the severe drought that followed in its wake caused considerably pooling of rivers and streams as early as first week of January, 1945. This afforded extensive breeding of *A. Culicifacies* and gave indication to the department that an epidemic of malaria might be anticipated about end of March, 1945. Vigorous oiling of streams and rivers were immediately undertaken and all necessary precautions, anticipating this outbreak were made.

As expected, a definite rise of Malaria was noticed during the week ended April 7, 1945, in certain areas in Western Province, North-Western Province and Province of Sabaragamuwa resembling the outbreak of 1943 in its distribution and date of the onset of the outbreak.

About the 5th of May, the situation in the affected areas in Western Province, North-Western Province and Province of Sabaragamuwa had considerably deteriorated, and there were indications that parts of Central Province and Southern Province were also becoming involved in this epidemic.

The continued drought and the partial failure of the South-West Monsoon made the breeding of *A. Culicifacies* possible in extensive areas, in spite of our oiling of streams.

By about the end of July, the epidemic reached its peak in many parts of Western Province, North-Western Province, Province of Sabaragamuwa, Central Province and Southern Province. The following stations showed a very high rise during the peak:—Halpe, Minuwangoda, Ambepussa, Mirigama, Avissawella, Veyangoda, in Western Province; Dankotuwa, Nattandiya, Giriulla, Kurunegala, Makandura, Narammala, Polgahawela, Alawwa in North-Western Province; Gampola, Nawalapitiya, Teldeniya, Kadugannawa, Katugastota in Central Province; Kegalla, Mawanella, Rambukkana, Karawanella, Kitulgala, Balangoda, Kuruwita Korale in the Province of Sabaragamuwa; and Hakmana and Dickwella in Southern Province. In all these areas, the peak of the epidemic was reached on week ended August 4, 1945, and thereafter there was a fall, though slight, which was maintained till the week ended October 27, 1945, when there was a sudden and decided rise in most of the areas already affected. In the meantime, about the beginning of August, some parts of the Province of Uva round Badulla and Bandarawela were also involved.

The second wave which started about the end of October was even worse than the first, and the position at the end of the year was causing considerable anxiety owing to the extensive nature of the outbreak resembling that of the great Epidemic of 1934-1935.

Measures adopted.—Knowing the gravity of the situation, all the resources of the Medical Department were mobilised to fight the enemy on all fronts. Vaccinators and laymen to be in charge of certain treatment centres, where mepacrine and medical comforts were distributed had to be made use of.

Emergency River oiling.—Owing to the unprecedented drought that prevailed during the major part of the year, oiling of rivers and streams where *A. Culicifacies*, the malaria mosquito was breeding was carried out, practically throughout the year.

As a means of adult control, pyrethrum and D. D. T. were sprayed in all the badly affected villages.

Numerous treatment centres were opened in the malaria stricken areas to be easily available to the people at short distances from their own homes.

Medical comforts such as malted milk, Lactogen, condensed milk, tea and sugar were freely distributed at the various treatment centres and in most of the dispensaries in the badly affected districts.

Distribution of Food relief by Revenue Officers to relieve distress was undertaken.

Temporary hospitals were opened at Narammala, Polgahawela, Rambukkana, Dullewe and Yattawatte.

The year 1945 had been one of great anxiety to the Government and that of the Medical Department in particular. The unprecedented drought, comparable to that which prevailed before the great outbreak of 1934-35 brought in its train, acute distress in some parts owing to failure of crops and lack of sufficient food. On the top of this calamity, the severe outbreak which started in April, 1945, assumed epidemic proportions, and caused much suffering on a community which had not sufficient resistance to fight against the disease.

It is fortunate that there have not been many deaths. But for the timely action taken by the Department and co-operation extended by the Revenue Officers in affording food relief, there would have been more deaths and more suffering to the people in these areas.

The Anti-malarial work of the division can be classified under the following headings:—

(A) Anti-malaria campaigns in the towns of Anuradhapura, Chilaw, Kurunegala Puttalam and Badulla.

Anuradhapura.—Malaria Control activities have been in progress for the 23rd year at Anuradhapura. The Urban Council area is $9\frac{1}{4}$ sq. miles of which approximately 6 sq. miles were under malaria control, and has a population of 12,287.

There has been a steady decrease of malaria since 1942, due to intensive disinsectization work in the town for the military authorities and to the establishment of D. D. T. units in the last quarter of 1945.

Control measures.—

- (a) Permanent control measures were not undertaken in view of the proposal to move the present Town to another area.
- (b) Recurrent measures adopted were oiling, maintenance of major drainage channels, maintenance of masonry works, filling, fish introduction into wells, and D. D. T. spraying.

The results of D. D. T. spraying as shown by preliminary reports are very satisfactory—a reduction in the November and December morbidity figures was noted.

Chilaw is about 2 square miles in extent and has a population of 9,075. Malaria control activities have been in existence since 1928. The land is almost flat and is below sea level.

Control measures.—

- (a) Permanent measures consisted of a minor filling of a part of the pond behind the Magistrate's Court, and a few swampy areas with town refuse and coir dust.
- (b) Recurrent works consisted of oiling, paris greening, fish introduction into wells, maintenance of drains, and revetting and faggotting of drains.

The progress of work especially in filling though satisfactory would have been much better if it had been possible to purchase filling material in sufficient and regular quantities. A comprehensive scheme of drainage for the whole town is being drawn up by the Sanitary Engineer and as soon as it is ready, the work will be undertaken in sections.

Kurunegala.—has a population of 13,466. The malaria control area is $4\frac{3}{8}$ square miles in extent, and the protected zone of $1\frac{3}{4}$ square miles formed the heart of the Urban Council town.

Control measures.—

- (a) Permanent measures consisted of the construction of three drains with pre-cast concrete and rubble, and the building up of the part of the Bu-ela between the Colombo road and Negombo road.
- (b) Recurrent measures consisted of oiling, paris greening, maintenance of drains, naturalistic methods of control such as introduction of larvivorous fish into wells.

Puttalam.—This is the 16th year of the existence of anti-malarial activities in this town which is $8\frac{5}{8}$ square miles in extent, of which only $2\frac{1}{4}$ square miles is under control. The population is 7,766.

Control measures.—

- (a) Permanent measures were confined to earth filling.
- (b) Recurrent measures were oiling, paris greening, maintenance of earth drains and channels and introduction of fish into wells.

Badulla.—has been under malaria control since 1929. The Campaign area is about 5 square miles in extent, and embraces almost the whole of the $3\frac{1}{2}$ square miles of the Urban Council area.

The estimated population is 13,162.

Control measures.—

(a) Permanent: No permanent work has been done except for a little minor filling.

(b) Recurrent: Recurrent works were oiling, paris greening and maintenance of drains and channels.

D. D. T. spraying was undertaken in November and December with very satisfactory results.

Maho.—Anti-malarial work has been in progress since 1932 at this important Railway junction.

Malaria morbidity figures for the Controlled area showed a decrease from those of the previous years.

Trincomalee and China Bay.—Malaria control work at these centres continued to be in sole charge of the Army authorities.

(B) **Agricultural, Colonization, and Irrigation Constructional Schemes**.—Anti-malaria measures consisting mainly of disinsectization with pyrethrum insecticide were undertaken in the following places:—

Minneriya Development Scheme, Minipe Ela Scheme, Elahera Scheme, Parakrama Samudra Scheme, Kagama Colony, Paranthan-Kilinochchi-Irranaimadu Scheme, Kottukachchiya State Farm, Tabbowa Colony, Polonnaruwa Livestock Farm, Pelwehera and Nalanda Farms, Beragama Colony, Wariyapola Agricultural Station and in several state farms and Chenas situated in malarial areas including Agricultural Corps Camps. Besides disinsectization, oiling of breeding places was done in some places (*e.g.*, Elahera, Nalanda). Simple control measures, such as, minor filling, pollution of breeding places, fish introduction to wells, cleaning and maintenance of drains were also adopted where indicated.

During the last quarter of the year, D. D. T. spraying unit No. 2 operated in the Minneriya, Kagama, Parakrama Samudra Schemes and Pyrethrum spraying was suspended in places covered by D. D. T. units.

(C) **Malaria Control Work in Rural Areas**.—Seasonal disinsectization work was extended to a large number of rural areas. In addition to disinsectisation, larval control methods were also carried out in some places.

The following places were taken up for rural work during the year:—

Alawwa, Mallawapitiya, Mahiella, Galgamuwa, Ehetuwewa, Munneswaram, Udabaddawa, Ganewatta, Madinnagoda, Wariyapola, Hettipola, Bingiriya, Bowatta Kalpitiya and Makandura in North-Western Province; Vavuniya, Madawachchiya, Chavakachcheri, Pallai, Kodikaman, Murunkan, Pooneryn and Mullaitivu in Northern Province; Valaichchenai, Eravur and Batticaloa in Eastern Province; Polonnaruwa Bazaar area in North-Central Province; Tangalla, Tissamaharama, Walasmulla, Weeraketiya and Hakmana in Southern Province; Godakawela and Opanayake in Sabaragamuwa Province; Moneragala and Medagama, and Koslanda in Uva Province; and Teldeniya in Central Province.

(D) **Malaria Control Work at Railway Stations**.—Seasonal disinsectization work was carried out as in the previous years in the undermentioned Railway Stations with a view to protecting the Railway Staff. The cost of the work was borne by the Railway Department, but the organization and execution of the work was carried out by the officers of the Medical Department. The stations where this work was done were:—

Alawwa, Polgahawela, Rambukkana, Maho, Galgamuwa, Paranthan, Anuradhapura, Madawachchiya, Mankulam, Pallai, Vavuniya, Mannar, Talaimannar, Gal-oya, Polonnaruwa, Batticaloa and Eravur.

(E) **Anti-Malaria Work for Imperial Authorities**.—The work done for the Imperial Authorities was at Kekirawa till the end of February, 1945. The cost of the work was paid for by the Imperial Authorities.

(F) **D. D. T. Units.**—An item of considerable importance was the establishment in October, of two D. D. T. spraying units to cover almost the whole of the North-Central Province, one working with Anuradhapura as the central station and the other operating from Kekirawa. All Agricultural Schemes, State Farms and Chenas, Railway Stations and Towns and rural schemes in this Province are covered by these two mobile units. The outbreak of malaria in epidemic form in the Intermediate and Wet Zones of the Island necessitated the establishment of several emergency D. D. T. mobile units to operate in the affected areas.

(G) **Special Work.**—

(a) *Examination of Blood Films:*—

	1943.	1944.	1945.
Total No. of specimens examined	18,218	16,642	13,640
No. positive	4,655	2,109	3,641
	Per Cent.	Per Cent.	Per Cent.
Parasite Rate	25.5	12.7	26.7

Percentage Prevalence of Species.

	Per Cent.	Per Cent.	Per Cent.
Benign Tertian	37.42	45.1	43.8
Malignant Tertian	44.42	39.6	55.2
Quartan	18.6	16.6	2.1

(b) *Investigation into Adult Catches.*—An investigation into the prevalence of adult mosquitoes in 96 selected areas located in various parts of the Island was instituted. The work in brief consisted of spraying four houses in each area selected once a week with pyrethrum insecticide and collecting and sending the dead mosquitoes for identification by the Medical Entomologist. The investigation was not complete at the end of the year.

SECTION 10.—MEDICAL ENTOMOLOGY.

(A) *Laboratory and Field Work.*—As in the previous years a very large proportion of the routine work of the Division was concerned with the detection of *A. Culicifacies* larvae and adults so that control measures could be applied without delay. The number of Observation Stations (46) remained the same but the location of some of the subsidiary observation sites in rivers and streams and examined by Sanitary Assistants was changed while the total number of sites remained the same (339).

The year under review was characterised by an intense and prolonged drought, which commenced about the end of November, 1944. Even at the beginning of January, 1945, it was apparent that conditions were becoming favourable for the breeding of *A. Culicifacies*. These conditions continued, owing to the late arrival of the South-West monsoon and its failure to develop, until the middle of October when the great drought came to an end with the onset of the North-East monsoon. Thus for the major part of the year conditions were very favourable for the breeding of *A. Culicifacies* unlike in 1944. Whereas in 1944, *A. Culicifacies* larvae and adults were recorded largely from the four Dry Zone Stations, in 1945, only the Southern section of the Intermediate Zone appeared to be relatively free from the presence of the carrier. From all stations in 1945, 2,590 adults were recorded as against 1,088 for 1944, and the number of infections also increased from 3 to 26 in 1945 (the infection rate increasing from 0.42 to 1.5). The four dry zone stations recorded an adult catch of 1,788 for 1945 as against 1,003 for the previous year with infections increasing from 2 to 11. Although the number of examinations of village breeding places was considerably lower owing to the drought, the number of larvae found increased from 298 to 418. But in the rivers only 928 larvae were found as against 1,379 in 1944. In the Eastern Hills of the Dry Zone, 54 adults were caught as against 7 in 1944, but there were no infections. *A. Culicifacies* larvae found in village breeding places increased 8 to 142, while river catches also increased from 4 to 307. In the intermediate zone (Northern Section) all 17 stations recorded *A. Culicifacies* as against 11 in 1944. Adults numbered 685 as against 74 in 1944 with 11 infections as against 1. Although more than 2,500 fewer village breeding places were examined, 1,847 larvae were found against 133 in 1944. Similarly in the rivers, 2,468 larvae of *A. Culicifacies* were collected as against 185 in 1944. The Wet Zone figures afford evidence of

the epidemic conditions that threatened and finally prevailed towards the end of the year. In 1945, adults were recorded from 9 of the 17 stations, while none were found in 1944. They numbered 53 with 4 infections as against none in 1944. In village breeding places and rivers, 59 and 423 larvae of *A. Culicifacies* were found in 1945, while the corresponding figures for 1944 were only 6 and 3 respectively.

At the Subsidiary Observation Sites, where larval dipping only was done, 6,789 examinations were made and 34,336 anopheline larvae were collected and identified. *A. Culicifacies* were found at 567 examinations and totalled 4,104 larvae. The corresponding figures for 1944 were 91 and 614 respectively. Larvae were most prevalent in the months of January, February, March, June, August and December.

This increase in the general prevalence of *A. Culicifacies* was correlated with a drought that in many ways paralleled the conditions which ushered in the great epidemic of 1934-35. But unlike in that year the danger was anticipated and extensive oiling of rivers and streams continued for the greater part of the year. Disinsectization with pyrethrum was resorted to whenever the adult figures and morbidity warranted, particularly in the intermediate zone. There is little doubt that but for these control measures being promptly and extensively applied, conditions would have deteriorated very much more.

(B) *Investigations at Malaria Campaign Centres.*—Entomological (Field) Assistants of the Division were attached to the staffs of Medical Officers of Health at Anuradhapura, Chilaw, Puttalam and Kurunegala. Their work, as before, was associated with Malaria Control activities and comprised two main lines of investigations:—

- (a) Comparative investigations into Anopheline prevalence in the Protected and Control Zones, and outside these zones.
- (b) Routine checking of the work of the oiling gangs in order to estimate the effects of this measure and to assist in maintaining a high standard of efficiency.

At Anuradhapura, approximately 500 breeding places were examined in the Protected Zone, 470 in the Control Zone, and 320 in the Outside Zone. Although *A. Culicifacies* larvae were three times as numerous in the Protected as in the Control Zone, these figures were largely swamped by heavy breeding in paddy fields in June. Adults, however, were relatively few in number in the Protected Zone. In addition to these routine investigations, observations were carried out at Puliyankulama Agricultural Experiment Station on shading irrigation channels with the Mexican Sunflower. This plant is not likely to prove very successful for the purpose as it grows rather rapidly with a consequent diminution in shade. With the application of D. D. T. in November, the routine malaria control activities of the Entomological Assistant were abandoned and a new programme of checking the residual effect of the insecticide was substituted. This work is being carried out in the Elakkatuwa road area and consists in trapping of mosquitoes in houses four times a week, animal bait trapping three times a week, with a larval survey once a week. Ponnarankulam, selected as the contrast village and untreated with D. D. T. is examined once a week. At Puttalam, approximately 500 breeding places were examined in the three zones. The presence of *A. Culicifacies* was definitely less in the Protected Zone than in the other two zones. Only a single adult *A. Culicifacies* was recorded in the Protected Zone, two in the Control Zone and 25 in the Outside Zone. At Kurunegala, approximately 300 breeding places were examined in each of the zones and breeding in wells was found to be high particularly in October, November and December. Adult prevalence, too, was higher than in the previous year. At Chilaw, about 150 breeding places were examined in each of the zones and *A. Culicifacies* larvae were most prevalent in the Protected Zones.

(C) *Mosquito Surveys.*—With the early cessation of the North-East monsoon in 1944, it became apparent early in January, 1945, that river conditions were fast becoming favourable for the breeding of *A. Culicifacies*. By resolution of the Departmental Committee on Malaria, general oiling was recommended on

January 10, 1945, in 21 Health areas in the Intermediate and Wet Zones where the conditions were found to be deteriorating. At the same meeting it was decided that an extensive check should be made on the breeding of *A. Culicifacies* in areas not already under oil and investigations into the efficiency of river oiling in others. Accordingly, four Entomological Assistants made extensive investigations from January to April and these surveys were valuable in bringing other areas under general oiling no sooner the presence of *A. Culicifacies* was detected. In June, a check up of oiling efficiency in the Veyangoda area coincided with the late arrival of the South-West monsoon. Towards the end of September, an investigation was made into an outbreak of malaria at Mulhalkelle and Uda-Pussellawa in the Nuwara Eliya District. Just prior to the investigation, control measures (oiling and disinsectization) had been introduced and the survey only served to indicate that these measures had been successfully applied. No adults were found and only a few larvae of *A. Culicifacies* were recorded. Investigations were also carried out in the M. O. H., Deniyaya's area in October, consequent on an outbreak of malaria at Gorakawela, as a result of which generalised oiling was recommended in the health areas of Deniyaya and Akuressa. The presence of *A. Culicifacies* in the Southern Province having thus been detected, further surveys were carried out in the health areas of Baddegama, Kamburupitiya, Akuressa, Hakmana and Walasmulla and control measures applied where necessary.

(D) *Fly Surveys*.—In January, a comprehensive fly survey of Matale Town was undertaken, the expenses of which were borne by the Urban Council. Fly surveys of the following hospitals were also carried out—Tuberculosis Sanatorium, Kankasanturai (in April and November), Galle Hospital (in July and December). The second survey at each of these Institutions revealed considerable improvement in sanitation. A fly survey of Negombo Hospital was carried out in December.

(E) *Rat Flea Surveys*.—Surveys were carried out in collaboration with Medical Officers of Health at Trincomalee, Weligama and Kurunegala. Only two species of fleas were recorded—*Xenopsylla cheopis* and *X. astia*. In all 597 rats were trapped in 219 houses, the total number of fleas collected being 1,330. The *cheopis* index at Kurunegala was 0.7 and at Trincomalee 0.5. No *X. cheopis* were found at Weligama.

(F) *Research*.—In the studies being carried out on Scrub Typhus, the field trapping of rodents at Embilipitiya (Province of Sabaragamuwa) was brought temporarily to a close in February, as it was felt that the taxonomy of the many new species of Trombiculid mites should be worked out before continuing any further field work. Many larval mites have been correlated with their nymphs bred out in the laboratory and these will be described in due course. Attempts made to rear nymphs to the adult stage have so far proved unsuccessful.

In view of the prolific breeding of the water fern *Salvinia* in and around Colombo, experiments were undertaken to determine if it were possible to rear larvae of *Mansonia* (*Mansonioides*) *uniformis* on this plant. A technique was found for doing so, and adults reared in the laboratory were found to oviposit readily on *Salvinia*.

The following papers have either been published, accepted for publication or prepared for publication:—

- (1) Mites (Acarina)—A Probable Factor in the Etiology of Spasmodic Bronchitis and Asthma Associated with High Eosinophilia by H. F. Carter and V. St. E. D'Abrera (Transactions of the Royal Society of Tropical Medicine and Hygiene—accepted for publication).
- (2) Some experiments on Toque Monkeys with Tyroglyphid Mites by H. F. Carter and V. St. E. D'Abrera.
- (3) Serological Reactions in Tropical Eosinophilia by V. St. E. D'Abrera and K. G. B. Stork.
- (4) Further Observations on Cases of Asthma and Bronchitis Associated with High Eosinophilia and with Mites in the Sputum by V. St. E. D'Abrera.

- (5) A Note on the Breeding of Nymphs of the Trombiculinae (Acarina) by S. H. Jayawickreme (Ceylon Journal of Science—Section B—in the press).
- (6) Resistance to the Action of a Mineral Oil Larvicide by Larvae of *Anopheles subpictus* Grassi by S. H. Jayewickreme (Ceylon Journal of Science—Section D—accepted for publication).

SECTION 11.—SANITARY ENGINEERING.

Water Supplies.—The following water supplies were inspected; reports with recommendations for improving and developing the sources of each supply with the necessary sketches are in hand:

Diyagama, Agrouvah, Talawakelle, Watagoda, Dimbulla, Hatton, Dickoya, Glenlyn, Mariya, Nanu-oya Raggala, Kandapola, Lindula, Norwood, Holbrook, Bogawantalawa, Dorawela, Peliyagoda, Sri Pada Pilgrim Routes, Kahawatta, Rakwana, Kottukachchiya State Farm and Pussellawa.

The following supplies were inspected and reported on:—

Pannala, Bopatalawa Farm, Kottukachchiya State Farm, and Witkule Colonization Schemes.

Work on the filtration wells at Parakrama Samudra Colony and at Hinguragoda Colony was put in hand and completed. Investigations are proceeding in connection with the pipe-borne water supplies to the following villages under the schemes of grants to Village Committees etc.:—

Kalpitigammedda, Hedunawa, Medagammeda, Maldeniya, Kosgahapatana, Pusulpitiya.

Water supplies at the Aranayake and Negombo hospitals were also inspected and chlorination was carried out at the Negombo Hospital.

Surface Drainage Schemes.—In spite of the serious shortage of staff, the surface drainage schemes in Chilaw, Batticaloa and Vavuniya were drawn up. Reports in detail with necessary plans and designs were prepared.

Surveys and levels in connection with Badulla town and Matale town are nearing completion. Although these comprehensive drainage schemes are drawn up by the Sanitary Engineer, the likelihood of their being taken up and completed within a reasonable number of years is very remote. This is due to the existing financial policy of Local Authorities having to contribute a portion of the cost of the schemes.

Sanitary Surveys of Hospitals.—This is a new large item of work entrusted to this Division. Progress has been necessarily slow due to lack of staff and Engineering vacancies not being filled. The Sanitary Survey reports of Gampaha and Dickoya are in hand.

Hospital Drainage.—Work in connection with the drainage schemes for Bogawantalawa, Mannar, Mental Hospital at Angoda, &c., were taken in hand during the year but much progress was not made owing to the shortage of staff.

Rural Hospitals and Maternity Homes.—The work in connection with construction of Rural Hospitals and Maternity Homes did not proceed as expected. Progress was retarded owing to shortage of staff, War conditions, scarcity of building materials (both local and imported), lack of transport facilities, and shortage of labour for civil requirements. Most of the contractors declined to proceed with the work as prices of building materials had risen very high. They were prepared to forfeit the security deposits rather than incur financial loss by doing the work at the rates quoted in their original contracts. The question of some relief to the contractors by way of compensation is under consideration. Most of the contractors had to find their agreements terminated either by mutual consent or otherwise, and fresh tenders had to be called on revised rates. With the cessation of the War and the discontinuance of labour forces by the services, it is anticipated that conditions will gradually return to normal to enable much greater progress to be expected in the work during the ensuing year by the provision of the necessary additional staff.

The statement below shows the position in respect of Rural Hospitals and Maternity Homes on the last day of the year:—

Rural Hospitals.—The following 19 Rural Hospitals were completed:—

Akuressa, Alawwa, Angunukolapelessa, Baddegama, Biyagama, Daulagala, Galagedera, Hakmana, Induruwa, Kalpitiya, Katuwana, Kotukachchiya, Marassana, Nalanda, Pooneryn, Urubokke, Warakapola, Wariyapola and Weligapola. Works are in progress in 47 Rural Hospitals.

Seven Hospitals were handed over to the Government Agent, North-Central Province for construction.

One Rural Hospital was handed over to the Public Works Department for construction.

Two Rural Hospitals were donated and completed.

Maternity Homes.—The following 5 Maternity Homes were completed:—

Bibile, Akuressa, Borakande, Hurikkaduwa and Getamane.

Six Maternity Homes are in progress.

Five Maternity Homes were handed over to Government Agent, North-Central Province for construction.

Water Analysis.—Comments were made on 47 reports on chemical and bacteriological analysis and suitable recommendations for necessary improvements were made.

Anti-Malaria Works.—Badulla and Delwita-oya—Rock pool Sealing:—Works were undertaken on sections of the Badulla and Delwita-oya including canalization of small section of the latter. The works at both places were completed during the year.

Barrier Dam at Giriulla.—The work on the Barrier Dam at Giriulla which was temporarily suspended during the previous year owing to floods was resumed and completed.

Improvements to Bu-ela, Kurunegala.—The work at Bu-ela was held up owing to a defaulting contractor. The work was commenced immediately departmentally and is proceeding satisfactorily.

Brown's Hill Channel, Matara.—Improvements were effected to this Channel by lining, turfing, &c. The work was completed during the year departmentally. The contractor selected from tenderers, refused to enter into an agreement.

Emergency River Oiling.—Owing to the unprecedented drought and the large number of health areas taken up for generalised river oiling, more than ten times the normal demand for Malariol had to be met. Owing to inadequacy of train transport facilities and shortages of drums for Malariol, two lorries were in daily use transporting Malariol, from Kolonnawa to the various Medical Officers of Health and immediately bringing the much needed empty drums for re-filling. Two Sanitary Assistants were temporarily attached to this Division for this extra work. In all 543,000 gallons of Malariol representing over 1,200 orders were despatched by the Shell Co.

In spite of every war-time difficulty and inadequacy of clerical staff provided for this work, an efficiency of 97 per cent. was maintained.

Workshop and Stores.—Owing to the housing of this Division in several small dwelling houses at 43rd lane, Wellawatta, only an unsatisfactory make-shift arrangement has been provided for the workshop. A large number of sprayers were repaired and spare parts supplied to meet the large increase in the oiling programme resulting in the heavy wear and tear of equipment. In addition, a large volume of equipment was ordered, stored and issued to all the Medical Officers of Health doing emergency river oiling work, Rural Malaria Control Work, and for Campaign Centres.

Drawing Office.—The following work was done at the Drawing Office: 126 sheets of original drawings were prepared; bill of quantities, estimates and specifications were prepared for most of the above drawings. Thirteen sheets of longitudinal sections were plotted; 572 tracings were prepared; 1,482 copies of Ammonia prints

were taken; 329 sheets of type plans were despatched; 30 sheets of charts were drawn; 28 sheets of maps were reduced by pantograph; 25 sheets of maps were enlarged by pantograph; 125 headings for office file covers were stencilled.

Miscellaneous.—Plans and designs for a Plant to deal with Industrial Wastes (Coconut Mill wastes) were completed. It is proposed to call for tenders early for the construction of the Plant, &c.

Kandy hospital extension survey was carried out and plans with the report were prepared.

Kegalla hospital extension survey was done and plans with the report were prepared.

Mr. E. B. Anketell, Assistant Sanitary Engineer, attended a conference of Engineers on the Kelani Ganga Flood Protection Scheme and submitted a report with suggestions.

Dr. C. Abrahams of the Nizamabad district of India visited the Sanitary Engineering Division.

SECTION 12.—A. R. P. WORK.

During 1945 only one Medical Officer of Health, Dr. D. M. de Silva was in the Civil Defence Scheme. He was A. R. P. Controller for the City of Colombo till October 1, 1945.

SECTION 13.—MOBILIZATION AND SECONDMENTS FOR MILITARY SERVICE.

At the end of 1945 there was a total of 19 Medical Officers of the Department who were mobilized.

SECTION 14.—WORK DONE IN HOSPITALS, DISPENSARIES, &c.

Hospitals.—A scheme for the construction of Rural Hospitals has been introduced under which it is proposed to provide as many as possible of such hospitals in the areas in which central dispensaries are now functioning. Twelve Rural Hospitals were completed and opened during the year. No other hospitals were opened. The total number of hospitals at the end of the year was 153. The total number of in-patients was 511,177.

Dispensaries.—Two new Central Dispensaries and 18 Visiting Stations were opened during the year. At the end of the year there was a total of 250 Central Dispensaries, 188 branch dispensaries and 427 visiting stations. The total number of patients treated at these Dispensaries as well as in the out-patients Departments of hospitals was 7,107,642.

Mental Hospital.—The accommodation provided was 2,500 beds. The number of certified patients admitted during the year was 509 and the number admitted to the House of Observation was 1,645. The number of certified patients discharged was 314 and uncertified 242. Of the 785 deaths, 451 died of dysentery, 47 of general debility, 29 of phthisis. The daily average number of patients for the year was 2,185.

Pasteur Institute.—1,059 patients were treated. There were 295 admissions to the Hospital. 114 litres of anti-rabic vaccine were prepared and supplied to the outstation centres. 427 brains were examined for rabies of which 219 were positive, 127 negative and 81 unfit for examination. Two deaths from hydrophobia (after treatment) were recorded for the year.

Dental Institute.—28,454 patients including children, were treated. The total number of visits paid by patients was 48,356.

The number of patients was made up as follows:—

Out-door patients—adults	..	..	25,642
Children attending the school clinic	..	..	1,040
In-door patients attending for dental treatment from hospitals	..	..	1,772
Total			28,454

A sum of Rs. 2,570.50 was collected as out-door charges and from dentures supplied to patients.

De Soysa Maternity Hospital.—The number of patients admitted to the non-paying section was 12,788 and 696 to the paying section. The accommodation provided was 247 beds in the non-paying section and 24 beds in the paying section. The daily average number of patients was 374.2. There were 9,235 live births, 661 still births and 188 miscarriages. The infant deaths totalled 572 and the maternal deaths were 21.5 per 1,000 deliveries. There has been an increase of over 150 per cent. in the infant death rate and 1.5 per cent. in the maternal deaths rate over last year's figures and a higher incidence in the still birth rate. The increase is attributed to the poor condition of the mothers arising from malnutrition and anaemia and the large number of immature and premature babies born. The total number of operations performed during the year amounted to 781.

Victoria Memorial Eye Hospital.—The accommodation provided consists of 96 beds; 7 in the paying wards and 89 in the non-paying wards. A new ward to accommodate 30 beds has been built and is now ready for occupation. There has always been overcrowding in the non-paying wards. The daily average of in-door patients for the year was 227 with a maximum of 279. A decline in the total attendance at Out-patients' Department and a marked increase in the in-door patients have been noted, compared with the figures for 1944, as would be seen from the following:—

	1944.	1945.
Total visits : Out-patients' Department ..	94,610 ..	91,128
Total No. of In-door patients treated ..	2,460 ..	3,045

1,563 major operations—802 extractions of cataractous lenses and 761 other operations were conducted.

The Eye Section of the Angoda Branch Hospital is visited weekly by the Surgeon-in-Charge and the Leprosy Hospital monthly by the Visiting Surgeons alternately. A school clinic was conducted once a week to which 44 first visits and 32 subsequent visits were paid.

Emergency Services.—The major part of the accommodation provided in various institutions for use of the services was released during the latter part of the year with the exception of the Welisara Hospital which continues to be occupied.

Medical Supplies.—The Scheme of Bulk Indents for Medical supplies has ceased and supplies of private importers are now being obtained through commercial channels. Steps are being taken to gradually remove all control of medical supplies as stocks arrive in.

Dieting.—Considerable difficulty is still being experienced in the dieting of patients in hospitals.

SECTION 15.—TRAINING OF MEDICAL AND HEALTH PERSONNEL.

Medical Officers.—Thirteen Medical Officers underwent a course of six months training in Health Work at the Kalutara Health Unit. One Medical Officer was sent for training in V. D. in December, 1945. Another was sent to India in July, 1945, to be trained in Tuberculosis Diseases, at Government expense. Apart from the nine months course this officer will follow in order to secure the T.D.D. (Madras) he is to have a further training of three months in surgical work at the Wanless T. B. Sanatorium at Wanlesswadi.

No officers were trained this year in Malariology. Six Medical Officers in Grade II. completed a nine months' Post-Licentiate Course in March, 1945, and a further batch of six officers are now following the course.

Apothecaries.—No Apothecary was trained in Public Health work during the year 1945.

Sanitary Assistants.—Twenty-four candidates were selected by a competitive examination for the training class but only eleven joined the class. All eleven learners were successful in the final examination.

Pupil Nurses.—Thirty-seven Pupil Nurses were taken on during the year bringing the total under training to 125, of whom 10 completed their training and were posted to different hospitals.

Nursing Sisters.—Nine nurses successfully completed the post-graduate course of training for sisters and 4 others were taken on for the same course of training.

Public Health Nurses.—Four candidates were selected for the Training class for Public Health Nurses and they are undergoing training at the Health Unit, Kalutara, since November 1, 1945.

Midwives.—147 new candidates were admitted to the training class in midwifery. 136 midwives completed the course of training after six months field training at Kalutara, Panadure and Jaffna.

Ward Attendants.—Forty-five males and 55 females out of 100 males and 100 females taken on for training in 1944 completed their course in January. An additional 17 females completed their training in June. The rest left the training classes. 100 males and 100 females were taken on for training (one year course) in February.

Training in Malariology at the Malaria Field Training Centre at Kurunegala.—Owing to the prevailing emergency malaria situation, no regular training classes in malariology were held at Kurunegala for the Medical Officers of Health and Sanitary Assistants.

Others.—Nine Assistant Commissioners of Local Government were given a two weeks' training in General Public Health work at the Kalutara Health Unit, and six days' training at the Malaria Field Training Centre at Kurunegala.

Eleven Divisional Revenue Officers were given a two weeks' training in General Public Health work at the Health Unit at Kalutara, and six days' training at the Malaria Field Training Centre at Kurunegala.

Twenty-four Rural Development Officers of the Department of Commerce and Industries were given a two weeks' training at the Kalutara Health Unit and 8 of them were given a six days' training at the Malaria Field Training Centre at Kurunegala.

Fifteen Women Rural Workers of the Lanka Mahila Samitiya were given a two weeks' training in Maternity and Child Welfare work, rural Dietetics and Sanitation at the Health Unit Kalutara.

Two Lay Registrars were given a short course of training at the Health Unit.

In addition, Medical Undergraduates, the Graduate student teachers of the Government Training College and student teachers of the Mirigama Training School were given demonstrations and lectures at the Kalutara Health Unit.

SECTION 16.—LABORATORY WORK.

Bacteriological Institute.—A total of 96,156 bacteriological examinations were carried out. 468 samples of water were examined bacteriologically and 19 of those showed evidence of pollution.

Hospitals.—404,214 examinations were carried out at the various hospitals in the Island.

Offices of Medical Officers of Health.—248,207 examinations were done at the offices and 28,241 in Colombo.

SECTION 17.—MEDICO-LEGAL WORK.

The Judicial Medical Officer and the Assistant Judicial Medical Officer, Colombo, examined 4,896 patients and held 741 post-mortem examinations. Seventy productions were microscopically examined, of these 25 were hair, 28 bones, tissues, &c., and 17 blood stained articles.

Medical Officers at other stations held 1,577 post-mortems which included 529 cases of accidents 237 of suicide and 399 of homicide. A total of 5,360 assault cases were examined out of which 1,871 were cases of grievous hurt. They also examined 271 other cases which included 101 of rape.

SECTION 18.—MEDICAL BUILDINGS.

Twelve Rural Hospitals, 3 Maternity Homes, 1 Dispensary, 1 Dental Clinic, 1 Social Health Annexe, 4 water supply schemes, and 5 other major works representing additions to existing institutions were completed during the year. A considerable number of other Rural Hospitals, Maternity Homes, and other major works are under construction. The more important of these are the New Operating Theatre at the General Hospital, Colombo, additional accommodation at the Civil Medical Stores, extensions to the Victoria Memorial Eye Hospital, Colombo, the Civil Hospital, Kandy, a Maternity Ward at Jaffna, extensions to the hospitals Kurunegala and Mullaitivu and acquisition of land at Galle, Nawalapitiya and Hendala. Some of these were sanctioned some years ago and are still in progress. There were also a number of minor additions and improvements carried out under the Vote for Additions and Improvements to Medical Buildings, the Vote for Electrical Additions, Improvements, and Minor Installations to Medical Buildings, and the Vote for Improvement to Sanitary Facilities in Medical Institutions.

Two new donated hospitals, one at Mirigama and the other at Homagama, are nearing completion. Other donations of land, buildings and money for new institutions or extensions to existing ones continue to be received.

Thirty-one Buildings and two plots of land belonging to the Department were in the occupation of the Services during the major part of the year in various parts of the Island. Some of these buildings, chiefly those in Colombo, have been handed back. At the same time the opportunity has arisen for this Department to take over certain Service establishments in various parts of the Island for Civil purposes. Funds provided under the Loan Scheme No. 5 of 1937 were utilized to acquire one other building near the General Hospital, Colombo, for the accommodation of staff. The New Out-patients' Department in Regent street, Colombo, the Hospital for Incurables, and the Leprosy Hospital at Yata-gala remain to be taken up. The Mental Hospital at Pelawatta is functioning on a small scale. Under the Post-War Scheme, orders have been placed with the Director of Public Works for the execution of certain major works, which were held up for a number of years owing to war conditions at the following institutions:—The General Hospital, Colombo, De Soysa Maternity Hospital, Colombo, Lady Havelock and Lady Ridgeway Hospital, Colombo, and the Civil Hospitals at Kandy, Galle, Jaffna, Ratnapura, Batticaloa, and Badulla. There will be two new institutions under this scheme, viz., the Home for Incurables and the Psychopathic Hospital.

SECTION 19.—QUARANTINE.

Port Health work was carried out in Colombo, Galle, and 15 minor ports. The following is a summary of the work done at Colombo:—

The number of ships granted pratique in the year was 1,679. Of these which entered the Harbour there were 7 ships with infectious diseases. There was fumigation of rice cargo in 1945 unlike in the immediate preceding years during the war period and the number of bags fumigated was 167,746.

874 bills of health and 6 rat certificates were issued. Eighty-nine ships were fumigated with Hydro Cyanide Gas. Deratization Exemption Certificates were issued to 84 vessels. 2,304 cradles of soiled linen from ships, &c., were disinfected for which Rs. 4,124 was recovered as fees and credited to revenue. 531 cradles were disinfected free.

Mandapam and Tattaparai Camps.—86,442 estate labourers and 226,383 passengers were passed to Ceylon through the Ceylon Government Quarantine Camps at Mandapam and Tattaparai in South India. The number of passengers passed through Tuticorin in 1945 had more than doubled the number in 1944. Of the passengers, 193,969 were passed without detention and 42,414 after full quarantine. 127,910 passengers and 85,830 estate labourers were vaccinated against smallpox and 79,614 estate labourers were treated for Ankylostomiasis.

SECTION 20.—MEDICAL COLLEGE COUNCIL.

During the year 22 candidates qualified as Apothecaries, 12 as Pharmacists and 149 as Midwives.

SECTION 21.—FINANCE.

The revenue and expenditure for the financial year ended September 30, 1945, were Rs. 3,316,011.79 and *Rs. 21,621,382.69 respectively. The financial statement of expenditure on the administration of the Medical Wants Ordinance (Cap. 176) showed a surplus of Rs. 1,566,086 on September 30, 1944.

S. F. CHELLAPPAH,
Director of Medical & Sanitary Services.

Colombo, August 7, 1946.



* These figures do not include the cost of new buildings and improvements to and maintenance of existing ones.

